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ABSTRACT

Two variables, expectations and self-efficacy, were investigated to illuminate their relationship with achievement. The school was the unit of analysis chosen, and three levels of subjects were evaluated--students, teachers, and principals. Students, teachers, and principals within high achieving schools were hypothesized to evidence significantly higher levels of expectations and self-efficacy than those subjects within low achieving schools. Two samples of ten public elementary schools each were drawn from Michigan; one sample from high achieving schools, one from low. Measures of expectations and self-efficacy were administered to all groups within each school. When students, teachers, principals were examined separately, only students' self-efficacy and teachers' expectations were significantly different across high and low achieving schools. However, examination across groups within each school demonstrated a strong trend indicating that as more than one group evidenced high expectations and self-efficacy, a greater likelihood existed that the school was high achieving. These results suggest that expectations and self-efficacy are important variables, particularly with students and teachers. (Author)

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Contributions to Achievement: The Role of Expectations and Self-Efficacy in Students, Teachers, and Principals

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CONTRIBUTIONS TO ACHIEVEMENT: THE ROLE OF EXPECTATIONS AND SELF-EFFICACY IN STUDENTS, TEACHERS, AND PRINCIPALS

Abstract

Two variables, expectations and self-efficacy, were investigated to illuminate their relationship with achievement. The school was the unit of analysis chosen, and three levels of subjects were evaluated--students, teachers, and principals. This comprehensive approach was selected due to the valuable interactions which were predicted among the groups of subjects. Students, teachers, and principals within high achieving schools were hypothesized to evidence significantly higher levels of expectations and self-efficacy than those subjects within low achieving schools.

Two samples of ten public elementary schools each were drawn from Michigan; one sample from high achieving schools, one from low. Measures of expectations and self-efficacy were administered to all groups within each school. When students, teachers, principals were examined separately, only students' self-efficacy and teachers' expectations were significantly different across high and low achieving schools. However, examination across groups within each school demonstrated a strong trend indicating that as more than one group evidenced high expectations and self-efficacy, a greater likelihood existed that the school was high achieving. These results suggest that expectations and self-efficacy are important variables, particularly with students and teachers. This should not be overlooked when discussing contributing factors to achievement. In addition, support is given for a systemic approach to educational research in schools to provide a richer base of data and a more realistic perspective which could not be achieved by examining students, teachers, and principals independently of one another.

Contributions to Achievement: The Role of Expectations and Self-Efficacy in Students, Teachers, and Principals

Expectations and self-efficacy have been found to be factors relating to student achievement (Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Brophy, 1982; Phi Delta Kappa, 1980; Rutter, Maughan, Mortimore, & Ouston, 1979). The usefulness of these findings have been limited, however, due to the studies' isolated focus on either students, teachers, or principals (Ornstein & Levine, 1981). In the past, these three groups have not been examined together to investigate the relation their collective expectations and self-efficacy have with student achievement. For instance, it is unclear whether a school, which has students, teachers, and a principal who all evidence high expectations and self-efficacy, is more likely to be high achieving.

Previous research suggested that differences within students', teachers', and principals' expectations and self-efficacy would be found between high and low achieving schools. In addition, the strength of the relationship with achievement would increase as more than one group--students, teachers, principal--evidenced high levels of expectations or self-efficacy or both. This study was therefore designed to see if in fact these hypotheses were true.

Method

Subjects

The field study was conducted in Michigan and involved two samples of ten schools each. Ten high achieving schools were randomly selected from all Michigan public elementary schools where 89 percent or more of the students had attained the objectives for mathematics and reading as

assessed by the Michigan Educational Assessment Program (MEAP). Ten low achieving schools were selected randomly from all Michigan public elementary schools where less than 75 percent of the students had attained these mathematic and reading objectives.

Students, teachers, and principals were assessed within each selected school. Students included all fourth graders since the MEAP was used only with the fourth grade at the elementary school level. Teachers who were assessed in this study included all the regular fourth grade classroom teachers within the selected schools. Principals of the chosen elementary schools composed the principal group. Altogether 758 students, 35 teachers, and 19 principals participated in the study.

Instruments

Prior to sample selection, a Pupil Questionnaire, Teacher Questionnaire, and Principal Questionnaire were designed, developed, and pilot tested. Each questionnaire was composed of two sections: one part measuring expectations, one measuring self-efficacy. The expectation scales focused on present expectations (e.g., passing a test) for student academic achievement or, in the case of students, for "their" academic achievement. All scales were checked for content validity by a panel of six experts. The alpha levels obtained for the expectation scales were .78 for students, .91 for teachers, and .89 for principals. The students' scale was also checked for reading level using the Dale and Chall (1948) and Fry (1968) methods. The readability level for the expectation scale fell within the lower third grade.

The self-efficacy instruments for students, teachers, and principals were composed of four subscales crossing positive and negative situations with internal and external locus of control items. As with the expecta-

tion scales, all self-efficacy instruments were checked for content validity by a panel of six experts. Analysis during the pilot testing phase in checking reliability demonstrated that the subscales were similar measures with the entire scale being highly homogeneous in measuring the same construct. Alphas obtained were .88 for students, .95 for teachers, and .95 for principals. Therefore, a total score was indicated rather than analysis by subscale. The readability level found for the student self-efficacy instrument was third grade.

Procedure

All twenty schools were visited by the same female researcher in late spring 1983, within a four week period. At the time of each visit, the Pupil Questionnaire measuring level of students' expectations and self-efficacy was administered to all fourth graders in attendance that day. Teachers and principals were requested to complete their questionnaires during the pupil administration whenever possible. Four Principal Questionnaires were sent back by mail. One principal did not return the questionnaire even though three follow up contacts were made.

Results

Using chi-square analysis, socioeconomic status (SES), gender, and racial composition of the students were tested for differences between high and low achieving schools. Table 1 presents the measures of chi-square obtained on each factor. No significant differences on these three factors were found, therefore, it was unnecessary to assign any as a covariate in the data analysis.

Table 1

Chi Square Analysis on Student Demographic Data

Demographic Factor	χ^2	Significance level
Gender	.05	not significant
Race	.33	not significant
SES	.81	not significant

The school was the unit of analysis, so prior to analysis averages were calculated to represent the school's mean student score for expectations and the school's mean student score for self-efficacy. If more than one class was involved, the teachers' scores from each classroom also were averaged.

In the examination of each attitude by group--students, teachers, principals--only teachers' expectations and students' self-efficacy were significantly different across high and low achieving schools. Tables 2 and 3 reflect these findings.

Table 2

Analysis of Variance: Expectations with Achievement Level by Group

Group	Achievement Level	Mean	Standard Deviation	N	F
Students	High	24.84	.97	10	2.10[a]
	Low	24.10	1.30	10	
Teachers	High	765.60[1]	50.43	10	29.69[b]
	Low	584.00	92.54	10	
Principals	High	737.60	64.47	10	1.35[c]
	Low	703.44	63.36	9	

[a]not significant; [b]$p < .01$; [c]not significant

Table 3

Analysis of Variance: Self-Efficacy with Achievement Level by Group

Group	Achievement Level	Mean	Standard Deviation	N	F
Students	High	225.30	7.66	10	10.21[a]
	Low	214.66	7.23	10	
Teachers	High	202.20	15.83	10	2.52[b]
	Low	192.43	11.29	10	
Principals	High	226.20	26.96	10	.01[c]
	Low	227.78	31.32	9	

[a] $p < .01$; [b] not significant; [c] not significant

Further analysis examining the joint relation of expectations and self-efficacy with achievement is presented in Table 4.

Table 4

Multiple Correlation with Expectations and Self-Efficacy on Achievement within Students, Teachers, and Prinicpals

Group	R	R^2	F
Students	.71	.51	8.22[a]
Teachers	.82	.66	16.63[b]
Principals	.25	.06	.51[c]

[a] $p < .01$; [b] $p < .01$; [c] not significant

The multiple correlation found with students (R = .71) and teachers (R = .82) indicated a strong relationship between their respective attitudes of expectations and self-efficacy with achievement.

Standardized regression coefficients (beta weights) were then calculated to compare the relative effect with achievement of each independent variable. The calculated beta weights can be found in Table 5.

Table 5

Standardized Regression Coefficients (Beta Weights) Comparing the Relative Effect on Achievement of Expectations and Self-Efficacy Within Students and Teachers

Group	Variable	Beta Weights
Students	Expectations	.282
	Self-Efficacy	.651
Teachers	Expectations	.809
	Self-Efficacy	.005

Since the beta weights were standardized, the relative influence of each variable can easily be seen. For example, the beta weight of students' self-efficacy was found to be .651, more than twice that of students' expectations--.282. Clearly, students' self-efficacy evidenced a strong relationship with achievement; nevertheless, the beta weight of students' expectations was substantial enough in adding to this strength that it should not be ignored or excluded. The high beta weight obtained for teachers' expectations (.809) reflected a strong relationship with achievement while teachers' self-efficacy (.005) appeared to add nothing to this association.

The final stages of analysis involved the strength of the relationship between each attitude and achievement across all groups within their school. As more than one group within a school (e.g., students and their teachers) evidenced high expectations or a strong sense of self-efficacy or both, the relationship with achievement was predicted to be stronger. To evidence high expectations, the students', teachers', or principal's school score on the expectation scale had to fall above the overall mean for expectations within their respective group. To evidence a strong sense of self-efficacy, the students', teachers', or principal's school score on the self-efficacy scale had to fall above the overall mean for self-efficacy within their respective group. Conversely, low expectations and weak sense of self-efficacy were any scores falling below the overall mean for their respective group. All schools on which complete data were available across students, teachers, and principal were examined and classified into categories ranging from all groups being low to all groups being high. Some categories were collapsed due to the small number of cases in the separate cells. Table 6 presents the data for expectations and achievement level by school. A contingency

Table 6

Contingency Table: Expectations and Achievement Level Across Students, Teachers, and Principal Within Each School

Achievement Level	All low or one high	Two high	Three high
High Achieving Schools	2	3	5
Low Achieving Schools	5	3	1

coefficient of .41 was obtained, demonstrating that 17 percent of the variance in achievement level was explained by the expectations of students, teachers, and the principal within a school.

This finding was echoed when examining self-efficacy and achievement level by school. The contingency table is presented in Table 7. A contingency coefficient of .44 was obtained indicating that 19 percent of the variance in school achievement level was explained by the combination of students', teachers', and principal's self-efficacy scores within that school.

Table 7

Contingency Table: Self-Efficacy and Achievement Level Across Students, Teachers, and Principal Within Each School

Achievement Level	All weak	One strong	Two or more strong
High Achieving Schools	0	3	7
Low Achieving Schools	3	3	3

Table 8 presents the data when both expectations and self-efficacy were taken together. A coefficient of .45 was obtained demonstrating that 20 percent of the variance on achievement level was explained by the joint level of expectations and self-efficacy of students, teachers, and principal within a school.

Table 8

Contingency Table: Expectations and Self-Efficacy with Achievement Level Across Students, Teachers, and Principals Within Each School

Achievement Level	None high	One high in both	Two or more high in both
High Achieving Schools	2	2	6
Low Achieving Schools	5	3	1

It should be noted that the strength of these contingency coefficients are hampered somewhat by the small number of schools involved in this study. Nevertheless, one can easily observe a trend reflected in Tables 6, 7 and 8. As more than one group evidenced high expectations or a strong sense of self-efficacy or both, greater likelihood existed that the school was high achieving; and conversely, as fewer groups evidenced high expectations or a strong sense of self-efficacy or both, greater likelihood existed that the school was low achieving.

Discussion

Two variables, expectations and self-efficacy were investigated in the study to provide additional information about their relationship with achievement. Three groups--students, teachers, and principals--were examined. Discussion will follow the format of focusing on the results found in each group first; then, interrelations among the groups will be presented.

Students. Within the students' group, only self-efficacy was found to be significantly different between high and low achieving

schools. Students in high achieving schools were more likely to believe that what they do affected their achievement. Students' expectations were not found to be significantly different between high and low achieving schools. In fact, the overall mean for each expectation item was extremely high (equivalent to choosing grade B or good work) for all students, thus, reflecting a high appraisal of their expected academic achievement. Very little variance (s^2 = .97; s^2 = 1.30 for high and low achieving schools respectively) was found between the samples' responses.

Two explanations are possible. First, the students could be unrealistic in their appraisal of their academic work denying any difficulties or failures. On the other hand, students might be accurate in their appraisal of their academic work but due to grade inflation or the influence of ability grouping, these expected grades may not reflect a true measure of achievement. In the former case, teachers may actually give primarily A's and B's to their students regardless of the quality of each student's work. Another possibility might be that students are allowed to resubmit work which initially is unsatisfactory until their work reaches an acceptable level--a philosophy of mastery learning. In a similar sense, ability grouping, dividing students into smaller units according to their skill level, may provide a context where primarily high grades are awarded since students complete work which is at their ability level. So even though a child might be reading two levels below his/her actual grade, he/she could still receive an A or B in reading if the work completed is acceptable. However, a child who is reading above grade level might also receive an A or B. Both students, in this case, would reflect similar expectations. These possible situations should be investigated and addressed prior to the initia-

tion of any further research examining students' expectations and achievement.

The final analysis performed with students as a separate group involved the joint relation on achievement of self-efficacy and expectations. The multiple correlation obtained demonstrated a significant relationship between these two variables and achievement. Examination of the beta weights indicated that students' self-efficacy, although a strong factor, was not alone in contributing to the relationship with achievement. Students' expectations were able to increase the relation with achievement by almost half. Therefore, the combined levels of students' expectations and self-efficacy were shown to be important in examining achievement.

Implications for practice stemming from these findings diverge along two dimensions. First, a student directed curriculum encompassing a course or series of lessons could be developed to instruct students on specific means of promoting personal self-efficacy in educational situations. In addition, teachers could play a crucial role by influencing students' self-efficacy through the use of their own behavior, as the well-documented literature on modeling will substantiate (deCharms, 1976; Schunk, 1980, 1981, 1982; Zimmerman & Ringle, 1981).

Teachers. Expectations of teachers, unlike those of students, were found to be significantly different in high achieving as opposed to low achieving schools. One speculation for these different results between teachers and students could stem from the influence grade inflation or ability grouping might have on students' expectations, as discussed in the previous section. Teachers' expectations, on the other hand, might be less affected by such factors. For example, a student in a middle ability group receiving an A in reading would probably be seen as a hard

working, but still average student. Thus, the expectations that teachers hold for the achievement levels of their students could be more independent of the actual grades received. A further explanation for these results might lie in the context of the teachers' expectations items which focused on the overall ability of their classroom rather than on expected grades as the students' expectation items did.

Teachers' self-efficacy was not found to be significantly different across achievement levels, even though the mean for high achieving schools was nearly ten points higher than the mean for low achieving schools. Part of the reason can be understood by examining the standard deviations of the teachers' self-efficacy scores. The standard deviations for teachers' self-efficacy in high achieving and low achieving schools were 15.83 and 11.29 respectively. The spread of teachers' responses was great, so great that it would have taken a much larger difference between means to gain significant results. From this study, it is difficult to determine why this result occurred. When mean school scores for teachers were investigated, three high achieving schools, in particular, evidenced self-efficacy scores which were as much as twenty-four points lower than the overall mean for both high and low achieving schools (197.32). Further research can only be suggested to explore these outliers as to the reasons they manifested these differences.

When teachers' self-efficacy and expectations were assessed as to their joint relationship with achievement, a significant multiple correlation was obtained. Sixty-eight percent of the variance in achievement could be explained by teachers' expectations and self-efficacy. The beta weights, however, demonstrated that teachers' expectations was the strongest factor (beta weight = .809) with teachers' self-efficacy

adding very little to this relationship (beta weight = .005).

A practical implication of this finding is to include within teacher training programs the unlearning of teachers' stereotypic expectations and to increase their perceptions regarding the ability of all students to achieve. Additional support for this notion is provided by Nowicki and Walker (1974) who have concluded that since natural occurring expectations are learned, they can be "manipulable" and unlearned.

In summary, it appears, in exploring student achievement, teachers' expectations hold great importance. Teachers' self-efficacy, however, is difficult to interpret. Outlying schools which reflect low teachers' self-efficacy scores should be examined before this variable is unqualifiably deleted from the contributing factors to student achievement.

Principals. No significant relationships were found among principals' expectations, principals' self-efficacy, and achievement levels. In fact, principals from high and low achieving schools were surprisingly similar. This similarity among all principals could be due to their administrative position being more removed from the classroom, and therefore, more distant from direct academic and achievement situations. In this manner, a generic feeling of expectations and self-efficacy might be developed.

Another possible explanation can be found by examining the Principal's Questionnaire. Principals' expectations and self-efficacy items were cast within a total school context, not a classroom situation. However, each school was chosen based on the fourth grade's scores on the Michigan Educational Assessment Test. If the fourth grade was, in fact, exceptionally high or low in its achievement as compared to the other grades, the overall assessment of the school would average out this exceptional case.

Finally, a third explanation for no difference found in the principals' data emerges from the literature. Although in two studies (Brookover et al., 1979; Gregory, 1980) principals' expectations were linked to high achievement in schools, a qualifier was added. High expectations for student achievement must not only be felt by the principals, but these attitudes must be "made known" verbally or by example to others. Therefore, principals might echo similar levels of expectations and self-efficacy, but in fact, few may really be instructional leaders.

Briefly then, although no significant differences were found with principals' self-efficacy and expectations across achievement levels, a conclusion stating that these principals' attitudes are unimportant in affecting student achievement may be erroneous due to the possible explanations outlined.

Students, Teachers, and Principals by School. Three analyses were conducted on the strength of the relationship with achievement when more than one group--students, teachers, principal--within a school reflected either (a) high expectations; (b) strong sense of self-efficacy; or (c) both high expectations and a strong sense of self-efficacy. In all three examinations, a trend emerged indicating that as more than one group within a school evidenced an above average level of expectations, self-efficacy, or both, the greater the likelihood that the school being examined was high achieving. As mentioned previously, the strength of this finding was reduced by the small number of schools involved in this study, resulting in very limited cell sizes for the contingency tables. Clearly, additional research is called for encompassing more schools to further test this projected trend.

It should be noted that the scope of this study was limited to an investigation of the interrelationships among expectations, self-efficacy,

and achievement within the context of the school. Although the results show relationships among the variables, these findings in no way imply causality. Future research design should be directed toward pinpointing possible causality trends within the interrelationships of achievement and students', teachers', and principals' levels of expectations and self-efficacy.

Briefly then, the results from this study suggest the following conclusions:

1. Students' self-efficacy is an important variable to be considered when discussing factors related to achievement.

2. Level of students' expectations, when examined jointly with students' self-efficacy, becomes an important factor in relation to achievement.

3. Teachers' expectations for their students' achievement are of significance in relation to the actual achievement of their students.

4. High achieving schools are likely to have more than one group--students, teachers, principal--with high expectations, a strong sense of self-efficacy, or both.

These conclusions demonstrate that attitudinal factors are tied to achievement. More drill, longer hours may be one type of response to a declining achievement problem. However, the attitudes shown to be significant in this study provide a broader basis from which change could be generated and should be addressed in any examination and promotion of school achievement level.

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Footnote

[1]The teachers' mean scores for expectations were much higher than the students' mean scores due to the differences within each scale. The students' expectation scale was based on six items. Options for responses spanned from poor or E/F (equivalent to one point) to excellent or A (equivalent to five points). Hence, a student's score for the expectation scale could fall anywhere between 6 and 30. The teachers' expectation scale, on the other hand, was based on nine items with options for responses ranging from 0 percent to 100 percent. Consequently, a teacher's total score for the expectation scale could fall anywhere between 0 and 900. A principal's expectation total score was based on the same number of items and type of response options (0 percent to 100 percent) as the teacher's. Therefore, the principal's range of scores was similar to the teacher's range, but of course, very different from the student's.